

Alberta Health

Seasonal Influenza in Alberta

2012/2013 Season

Surveillance and Assessment Branch

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Executive Summary

The 2012/2013 influenza season in Alberta was considered a “moderately severe” season, starting sooner, peaking earlier, and resulting in more cases of influenza than the previous season. The rate of lab-confirmed influenza infection was 72 per 100,000, almost twice as high as the rate in the 2011/2012 season. The majority of cases were due to Influenza A (H3), however the proportion of cases due to Influenza B increased significantly from previous seasons. There was one case of oseltamivir resistance reported in Alberta this season.

The rate of hospitalization was twice as high this season as compared to last season. Persons age 80 or older were three times more likely to be hospitalized this season than last season, while children under the age of one had similar rates of hospitalization.

Introduction

The 2012/2013 influenza season in North America began earlier, peaked earlier, and was slightly longer than other seasons since 2003, with the exception of the 2009 A(H1N1)pdm09 season^{1,2}. It was considered a “moderately severe” season, with more severe disease reported in the USA and Canada than the previous season^{1,2}. In Canada, 10 per cent of respiratory specimens tested positive as of week 47 (November 18, 2012), dipped below 10 per cent in week 18 (week ending May 4, 2013)³. As a comparator, the 2011/2012 influenza season started later than normal, with at least 10 per cent of respiratory samples testing positive for influenza in Week 7 (February 12, 2012) and continuing until Week 18 (May 5, 2012).

The majority of strains characterized by the National Microbiology Laboratory (NML) were antigenically similar to the 2012/2013 influenza vaccine³. Forty-four per cent of strains typed were similar to A/Victoria/361/2011, 36 per cent of were similar to B/Wisconsin/01/2010, 16 per cent were similar to A/California/07/09, and nine per cent were similar to B/Brisbane/60/2008. A B/Brisbane/60/2008-like virus was not a component of the 2012/2013 influenza vaccine, but was a component of the 2011/2012 vaccine.

This influenza season was notable for the emergence of H7N9 avian influenza in China, resulting in 135 reported human cases of illness and 44 deaths in 12 provinces and two countries⁴. The majority of cases were elderly men⁵ and transmission has been linked to live poultry markets^{6,7}. There have been no cases of H7N9 reported outside of mainland China and Taiwan. While it was reported that a convalescing traveler had landed in Edmonton with antibodies against H7N9, further testing revealed this not to be the case.

This report describes the 2012/2013 influenza season in Alberta. While influenza surveillance in Alberta continues year round, this report includes surveillance of influenza activity from September 30, 2012 (Week 40) to July 20, 2013 (Week 29) (See Appendix for weeks and date ranges for the 2012/2013 season).

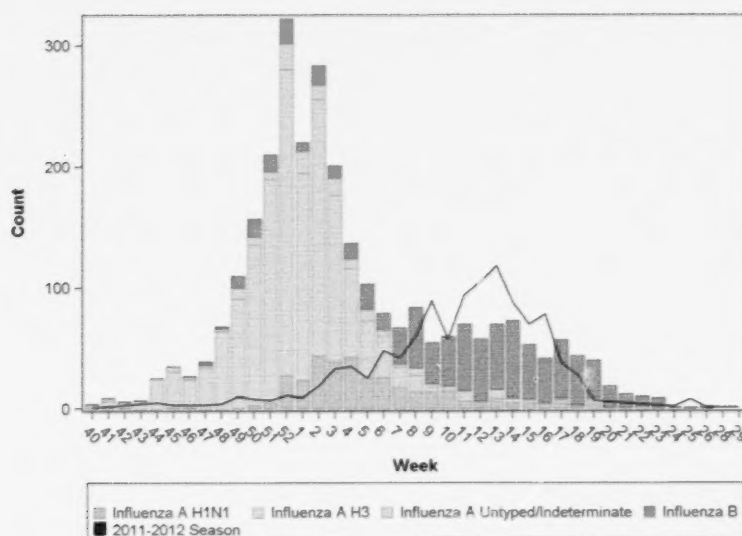
Acknowledgements

The information used in this report includes data from confirmed influenza cases from the Provincial Laboratory of Alberta (ProvLab), influenza like illness (ILI) activity from the Alberta sentinel physician system (TARRANT), Alberta outbreak reports, physician claims data, immunization/adverse reactions to immunization information system data (IMM/ARI), the AHS Weekly Alberta Respiratory Virus Surveillance Report, and hospitalized case report forms from the Communicable Disease Reporting System (CDRS). We would like to thank Alberta Health Services, the Provincial Laboratory of Alberta, the National Microbiology Laboratory, and TARRANT sentinel physician system for their partnership in influenza surveillance in Alberta.

Influenza Activity in Alberta

The influenza season in Alberta was similar to that in the rest of the country: it started sooner and peaked earlier than recent years, and there were more cases overall (Figure 1). 28,933 Albertans were diagnosed with influenza during the 2012/2013 influenza season: 22,638 were diagnosed in general practitioner office visits and 6,295 in emergency departments. This is an increase of 34 per cent over the 2011/2012 season. The 2012/2013 season had two times more lab-confirmed cases than the 2011/2012 season and 3.5 times more cases than the 2010/2011 season, although 60 per cent less reported cases than the 2009/2010 pandemic season. The proportion of influenza-like-illness (ILI)^a reported by sentinel physicians followed a similar pattern to that of lab-confirmed cases with a higher proportion of visits due to ILI overall, which peaked in week 52.

Figure 1: Laboratory-confirmed cases of influenza, by subtype* and week of diagnosis.**



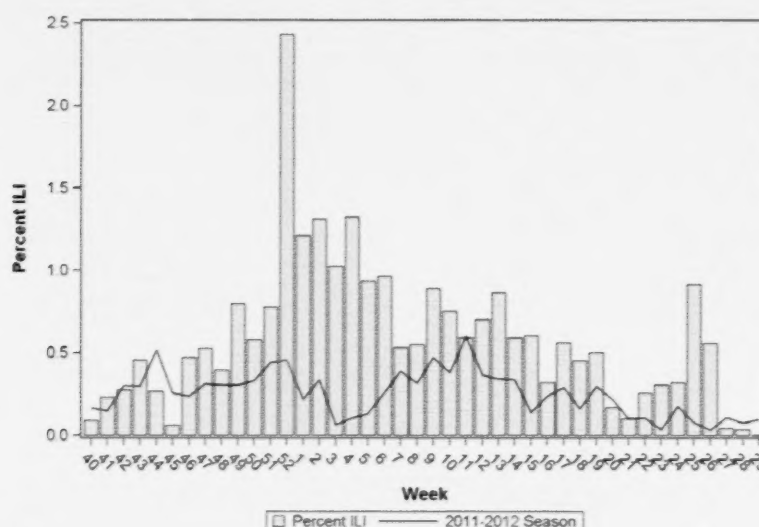
* The Influenza A Untyped/Indeterminate category includes samples where the reporting Laboratory was unable to type due to low viral load or reported that it was untypeable by nucleic acid amplification test (NAAT).

** The 2011-2012 season is indicated by the black line.

Source: CDRS, Alberta Health

^a Influenza-like illness (ILI) is defined as a respiratory illness with an acute onset presenting with fever, cough, and at least one of the following symptoms: exhaustion and weakness, body aches and pains, sore throat.

Figure 2: Per cent of patient visits due to influenza-like illness as reported by sentinel physicians, by week and season.



Source: TARRANT

There were 2,871 laboratory-confirmed cases in 2012/2013, for a rate of 72 per 100,000. The majority of cases were due to Influenza A(H3) (56 per cent), 27 per cent were due to Influenza B, 12 per cent were due to H1N1pdm09, and five per cent were influenza A but unable to be typed further (Figure 1). This is a substantial increase in Influenza B, as Influenza B made up less than one per cent of the cases reported in the last two seasons.

Alberta Health Service Zone

Similar to last season, the Edmonton Zone had the largest burden of disease, with 1,070 cases reported, but South Zone had the most reported influenza per capita with a rate of 105.8 reported cases per 100,000. The epidemic curve and relative proportions of subtypes were similar to the overall pattern for Alberta; however Edmonton Zone and Northern Zone had proportionately more influenza A(H1N1)pdm09 strains, and Northern Zone peaked in week two.

Table 1: Rate of influenza by Zone (per 100,000)*

Zone	2011-2012		2012-2013	
	Count	Rate	Count	Rate
Calgary Zone	267	18.8	766	51.8
Central Zone	134	29.4	379	81.3
Edmonton Zone	414	34.7	1070	86.6
Northern Zone	148	32.6	336	71.5
South Zone	161	55.4	314	105.8

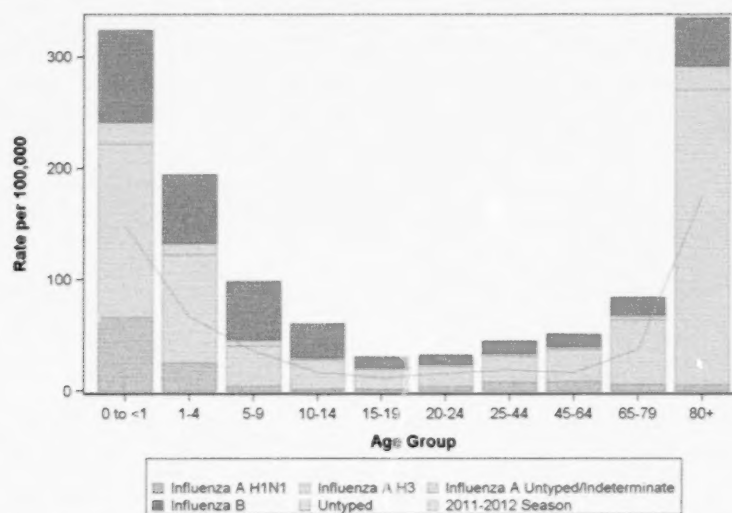
Source: CDRS, Alberta Health

* Note: 8 cases did not have the zone recorded in CDRS and are therefore not included in this table

Age Breakdown

While the largest absolute number of cases was reported from the 25-44 and 45-64 age groups, the largest per capita rate of cases was reported from the elderly (80+), infants less than one year of age, and children aged one to four years (Figure 3). While influenza A (H3) was the most prevalent subtype reported in each age group, there was proportionately less influenza A (H1N1) in children between the ages of five and 19 and those age 80 and older. This may be due to immunity due to previous infections or immunization in this year or years past.

Figure 3: Rate of laboratory-confirmed influenza infections by age and subtype*.



*The Influenza A Untyped/Indeterminate category includes samples where the reporting laboratory was unable to type due to low viral load or reported that it was untypeable by nucleic acid amplification test (NAAT).

Source: CDRS, Alberta Health

Reported Outbreaks

There were 95 outbreaks reported to Alberta Health this season, an increase of 37 per cent over the previous season. Similar to 2011/2012, the majority of outbreaks occurred in long-term care facilities and supportive living/home living sites (71 per cent), with a few in schools (10 per cent) and child care facilities (three per cent). There were 13 outbreaks (13 per cent) in acute care facilities this season as compared to three (six per cent) from the 2011/2012 season.

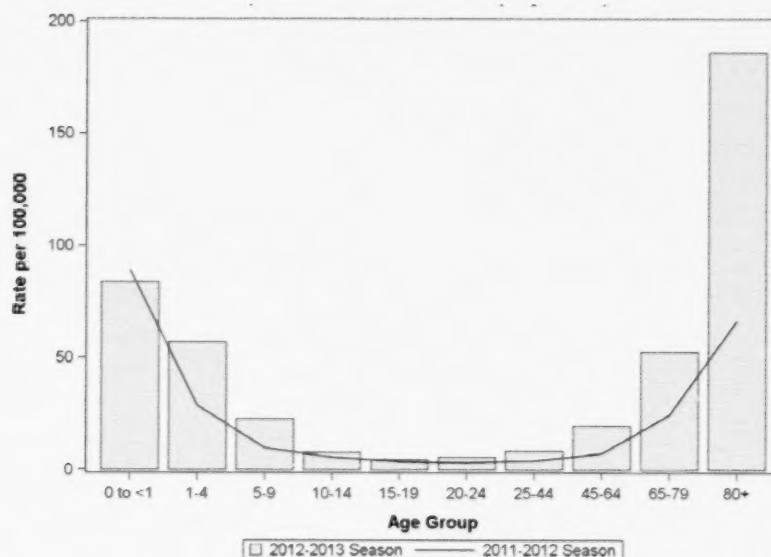
Hospitalized Cases

The rate of hospitalization in the 2012/2013 influenza season was approximately twice that of the 2011/2012 season, although the proportion of deaths and intensive care unit (ICU) admissions were similar. In the 2012/2013 season there were 964 hospitalized influenza cases reported to Alberta Health, 150 (16 per cent) ICU admissions reported to be due to influenza, and 37 cases (four per cent) where influenza either contributed to death or was the

cause of death. Subtypes of isolates from hospitalized cases followed closely the pattern of subtypes found in the community.

The rate of hospitalization was highest in individuals over the age of 80 (186 per 100,000), more than twice that of the next highest age category, infants under the age of one (84 per 100,000) (Figure 4). Children aged one to four years and seniors age 65-79 had the next highest rates of hospitalization. Interestingly, seniors age 80 and over had three times the amount of hospitalization in 2012/2013 as compared to 2011/2012, while infants under the age of one had approximately the same rate of hospitalization this year as compared to last year.

Figure 4: Rate of hospitalized influenza cases by age group and season.



Source: CDRS, Alberta Health

Eighty-five per cent of hospitalized individuals had at least one chronic underlying medical condition, and 45 per cent had at least two. This varied by age, however, as over 95 per cent of individuals age 45 or older had at least one medical condition as compared to 67 per cent of those less than age 45. Chronic heart disease was the most common medical condition, followed by COPD, smoking, asthma and immune suppression (Table 2)^b.

^b Note that chronic medical conditions were often missing or listed as “unknown” in SRI reports, with a higher proportion missing or unknown in children and young adults. Therefore caution is necessary when interpreting the relative proportions of medical conditions in the age groups.

Antiviral Resistance

The National Microbiology Laboratory (NML) tested over 1,500 influenza viruses from across Canada for resistance to the antiviral drugs oseltamivir and zanamivir, and 1,344 for resistance to amantadine³. Similar to last season, 99.9 per cent of viruses tested were resistant to amantadine, however, while no viruses were found to be resistant to oseltamivir or zanamivir (neuraminidase inhibitors) in the 2011/2012 season, five (0.3 per cent) were found to be resistant to oseltamivir and four (five per cent) found to be resistant to zanamivir. One of those five resistant to oseltamivir was from Alberta.

Table 2: Proportion of hospitalized influenza cases with known underlying health conditions, by age group.

	≥ 1 medical condition		≥2 medical conditions		Asthma		COPD		Chronic Heart Disease		Chronic Lung Disease		Chronic Renal Disease		Immune Suppression		Pregnant		Smoker		Chronic Hepatic Disease		Epilepsy		Obesity		Other Chronic Conditions		Pregnancy Loss		Post Partum		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
0 to <1	13	30	1	2	.	.	1	2	3	7	.	.	1	2	43
1-4	76	62	16	13	17	14	.	.	6	5	15	12	3	2	6	5	.	.	.	.	2	2	4	3	.	.	24	20	.	.	.	.	123
5-9	36	64	8	14	10	18	.	.	4	7	3	5	2	4	5	9	.	.	.	.	.	.	3	5	.	.	15	27	.	.	.	.	56
10-14	14	78	5	28	3	17	.	.	1	6	.	.	.	.	.	2	11	.	.	.	.	.	2	11	.	.	7	39	.	.	.	.	18
15-19	8	73	1	9	3	27	.	.	1	9	1	9	.	.	.	.	.	.	.	2	18	.	.	.	.	.	.	.	.	.	.	.	11
20-24	16	100	4	25	3	19	.	.	.	.	.	.	.	.	3	19	4	25	2	13	.	.	1	6	.	.	3	19	.	.	.	.	16
25-44	86	83	43	42	29	28	1	1	8	8	2	2	2	2	10	10	16	16	29	28	5	5	.	.	16	16	23	22	.	.	2	2	103	
45-64	195	96	115	56	36	18	53	26	39	19	18	9	21	10	39	19	.	.	74	36	16	8	4	2	40	20	69	34	.	.	.	.	204
65-79	160	95	112	67	15	9	73	43	74	44	14	8	22	13	34	20	70	43	34	20	9	5	4	2	24	14	57	34	.	.	.	.	168
80+	211	97	127	59	18	8	67	31	127	59	17	8	33	15	24	11	.	.	10	5	4	2	.	.	19	9	88	41	.	.	.	.	217
Unknown	3	60	1	20	5
Total	818	85%	431	45%	134	14%	194	20%	261	27%	71	7%	83	9%	124	13%	20	2%	151	16%	36	4%	18	2%	99	10%	289	30%	0	0%	3	0%	964	

Source: CDRS, Alberta Health

Appendix: 2012/2013 Influenza Season Reporting Weeks

Week	Start	End
40	September 30, 2012	October 6, 2012
41	October 7, 2012	October 13, 2012
42	October 14, 2012	October 20, 2012
43	October 21, 2012	October 27, 2012
44	October 28, 2012	November 3, 2012
45	November 4, 2012	November 10, 2012
46	November 11, 2012	November 17, 2012
47	November 18, 2012	November 24, 2012
48	November 25, 2012	December 1, 2012
49	December 2, 2012	December 8, 2012
50	December 9, 2012	December 15, 2012
51	December 16, 2012	December 22, 2012
52	December 23, 2012	December 29, 2012
1	December 30, 2012	January 5, 2013
2	January 6, 2013	January 12, 2013
3	January 13, 2013	January 19, 2013
4	January 20, 2013	January 26, 2013
5	January 27, 2013	February 2, 2013
6	February 3, 2013	February 9, 2013
7	February 10, 2013	February 16, 2013
8	February 17, 2013	February 23, 2013
9	February 24, 2013	March 2, 2013
10	March 3, 2013	March 9, 2013
11	March 10, 2013	March 16, 2013
12	March 17, 2013	March 23, 2013
13	March 24, 2013	March 30, 2013
14	March 31, 2013	April 6, 2013
15	April 7, 2013	April 13, 2013
16	April 14, 2013	April 20, 2013
17	April 21, 2013	April 27, 2013
18	April 28, 2013	May 4, 2013
19	May 5, 2013	May 11, 2013
20	May 12, 2013	May 18, 2013
21	May 19, 2013	May 25, 2013
22	May 26, 2013	June 1, 2013
23	June 2, 2013	June 8, 2013
24	June 9, 2013	June 15, 2013
25	June 16, 2013	June 22, 2013
26	June 23, 2013	June 29, 2013
27	June 30, 2013	July 6, 2013
28	July 7, 2013	July 13, 2013
29	July 14, 2013	July 20, 2013

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- ³Source: FluWatch Report, Weeks 33 & 34. Public Health Agency of Canada.
- ⁴World Health Organization (2013). Number of confirmed human cases of avian influenza A(H7N9) reported to WHO, Report 9. August 12, 2013. Last accessed, September 12, 2013.
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